

SPREAD SPECTRUM SIGNALING FOR SPEECH WATERMARKING

Abstract of the Disclosure

Methods and apparatus for encoding an arbitrary digital message, e.g., a watermark, into a speech signal are provided. In one aspect of the invention, a method of embedding digital information in a speech signal comprises the steps of: (i) generating a spread spectrum signal, wherein the spread spectrum signal is representative of the digital information and further wherein the spread spectrum signal is within a frequency bandwidth corresponding to speech; and (ii) embedding the spread spectrum signal in the speech signal. By making use of spread spectrum technology and speech analysis techniques in the signal generation and embedding operations, respectively, significantly higher bit rates can be embedded into the speech signal without effecting the perceived quality of the recording. The invention also provides methods and apparatus for recovering the digital information embedded in the speech signal.

1500-165.APP